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ABSTRACT

This paper examines the effects of labor supply reduction on published measures of the average annual earnings of black men since 1964. Time series data show that black men, who traditionally earn much less than whites, realized major gains in relative earnings between the mid-1960s and mid-1970s, but since the mid-1970s their position relative to white men has been stable. Male labor supply indicators are examined to assess the size of the labor supply changes and the possible effects of sample censoring on published earning medians. Also examined is Butler and Heckman's labor supply-sample censoring hypothesis, which suggests that growth in government transfer payment programs since 1964 has been responsible for an apparent gain in black relative earnings. The following conclusions were reached: (1) little support was found for the testable implications of the sample censoring hypothesis; and (2) labor supply reductions had only a modest effect on the published earnings medians in 1985. Most of the gain in relative earnings realized by black men since 1965 was due to factors other than labor supply reductions. Data are presented on four tables. Footnotes and a bibliography of 26 items are included. (BJV)

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by Wayne Vroman*

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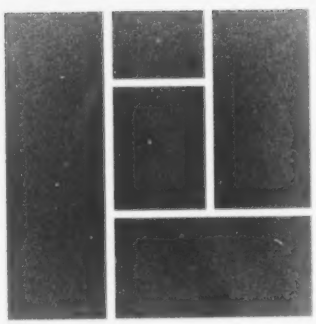

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Project Report

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Labor Supply and Black Men's Relative Earnings Since 1964

by Wayne Vroman*

February 1987

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Introduction

This paper examines the earnings of black men with particular attention to the effects of labor supply reductions on published measures of average annual earnings. Time series data show that black men realized major gains in relative earnings between the mid 1960s and mid 1970s, but since the mid 1970s their position relative to white men has been stable. Male labor supply indicators are examined to assess the size of the labor supply changes and the possible effects of sample censoring on published earnings medians.

The paper has five parts. Part I briefly reviews selected literature and time series data on the relative earnings of black men. The labor supply-sample censoring hypothesis proposed by Butler and Heckman (1977) (1978) is presented. Parts II, III and IV examine testable implications of the sample censoring hypothesis. Part V then assesses the effect of labor supply reductions on published measures of relative earnings. Earnings medians by race are recomputed for 1985 after adding labor force dropouts to the published earnings distributions.

Two main and closely related conclusions are reached. (1) Little support was found for the testable implications of the sample censoring hypothesis. (2) Labor supply reductions had only a modest effect on the published earnings medians in 1985. Most of the gain in relative earnings realized by black men since 1964 was due to factors other than labor supply reductions.

I. Literature and Time Series Data on Relative Earnings

Economic explanations for the low earnings of black men fall into two broad, but not mutually exclusive, categories: demand and supply explanations. Formal theory for both explanations draws upon the early work of Becker (1957). Demand explanations focus on the effects of the business cycle, discrimination, and crowding in the labor market. The theories of Bergmann (1971), Thurow (1969), and Doeringer and Piore (1971), all describe how the functioning of labor demand serves to initially place and then to maintain black men in low status, unstable, and cyclicly sensitive jobs. Although the exact labor market processes depicted in the crowding theory, the queue theory, and dual labor market theory are quite different, all three conclude that black men suffer labor market disadvantages in comparison to white men.

Several time series studies have shown a significant effect of the business cycle on relative earnings. Papers by Brown (1984), Freeman (1973, 1981), Masters (1975), Rasmussen (1970), and Vroman (1974) all show that relative earnings rise in periods when output expands and unemployment falls. There is much less agreement as to the effects of anti-discrimination policies on relative earnings. (See Brown (1982) and Cain (1985).)

Supply explanations typically stress how the process of human capital formation can result in low earnings. Becker (1964) and Mincer (1970) (1974) are prominent in this literature. Essentially these explanations view low earnings as a result of low human capital formation, including low levels of formal schooling, low quality schooling and low levels of investment in on-the-job training.

Black-white differences in the quality of schooling have been declining. Work by Welch (1973) and Freeman (1972) examined quality indicators such as teacher salaries, length of school year, absentee rates, and grade retardation rates and found that black-white differentials have declined markedly in the past fifty years. Differentials by race in the quantity of schooling have also been declining. This is apparent in the educational attainment data from Decennial Censuses and Current Population Surveys (CPS). Recent papers by Smith (1984) and Smith and Welch (1986) provide detailed documentation of this convergence. Despite the gains in black men's educational attainment, substantial differences are still observed for men of older ages.

The gains in educational attainment realized by black men have been large and have been occurring at a steady rate over the past forty years. Applying an extended schooling model to micro data on education, earnings, and other data from the five most recent Decennial Censuses, Smith and Welch (1986) and U.S. Commission on Civil Rights (1986) have concluded that gains in the quantity and quality of educational attainment have accounted for most of the earnings gains realized by black men during the forty-year period from 1940 to 1980.

A second supply-oriented explanation for changes in relative earnings has been offered by Butler and Heckman (1977) (1978). They argue that growth in government transfer payment programs since 1964 has been responsible for an apparent gain in black relative earnings. Their argument emphasizes the high replacement rates that government transfers represent for low-wage workers. Since blacks traditionally earn much less than whites, disproportionate numbers of black workers would be attracted by the availability of transfers and stop working.

The earnings distributions published by the U.S. Census Bureau and the Social Security Administration refer to persons with some earnings during the year. As a consequence of transfer-induced labor supply reductions, Butler and Heckman argue that the earnings medians have been increasingly affected by a problem of sample censoring. Transfers induce a labor supply response that removes low-wage workers from the earnings distribution and artificially inflates the published earnings medians. Because proportionately more blacks are affected, transfers influence the black median to a larger extent and cause the black/white ratio to rise. There might be no increase in the ratio if the zero earners were not removed from the distribution.

The sample censoring (or sample selection) hypothesis has several testable implications. In an analysis that covered the 1953-1978 period, Brown (1984) concluded that forty percent of black men's earnings gains after 1964 could be attributed to sample censoring and that the remaining sixty percent was due to other factors. The tests of this paper differ from Brown's and extend to more recent years. Before describing these tests, however, it will be useful to review the time series data on the relative earnings of black men.

All public data on earnings by race show very wide disparities in the average earnings of black men and white men. Table 1 displays summary data on ratios of median annual earnings from four different data series that cover part or all of the period from 1953 to 1985. The data are arranged into three sub-periods (1953 to 1964, 1964 to 1974 and 1974 to 1985) to give a succinct overview of recent experiences.

Five "facts" about the male racial earnings gap are obvious in Table 1. (1) In no year is the black median close to the white median.[1] (2) There is

Table 1. Changes in Black Men's Relative Earnings for Selected Periods: 1953 to 1985

TIME PERIOD AND CHANGE IN RELATIVE EARNINGS	Data Source: CPS: Wage and Salary Workers 15 and Older		CPS: All Workers with Earnings 15 and Older		SSA: All Workers with Earnings 16-64		SSA: All Workers with Earnings 15 and Older	
	Year	NW/W Ratio	Year	B/W Ratio	Year	B/W Ratio	Year	B/W Ratio
1953 to 1964								
First Year	1953	.594	a		1957[b]	.521	a	
Last Year	1964	.585	a		1964	.528	a	
Total Change in the B/W Ratio		-.009				-.003		
Average Annual Change in the B/W Ratio		-.001				-.000		
1964 to 1974								
First Year	1964	.585	1967[b]	.580	1964	.528	a	
Last Year	1974	.709	1974	.651	1972[c]	.615	a	
Total Change in the B/W Ratio		.124		.071		.087		
Average Annual Change in the B/W Ratio		.012		.010		.011		
1974 to 1985								
First Year	1974	.709	1974	.651	a		1974	.615
Last Year	1985	.719	1985	.663	a		1983[c]	.632
Total Change in the B/W Ratio		.010		.012				.016
Average Annual Change in the B/W Ratio		.001		.001				.002

Source: CPS - The Current Population Survey; SSA - Tabulations of The Social Security Administration's 1 Percent Continuous Work History Sample. All data refer to the median relative earnings of black men except the CPS data for wage and salary workers which refer to nonwhite men.

a - Data not available
b - First year of data availability
c - Last year of data availability

no obvious upward trend in the median earnings ratios between 1953 and 1964.[2] (3) Major gains in black relative earnings are evidenced in all series in the period from 1964 to 1974. (4) Between 1974 and 1985 there is no pronounced trend in the relative earnings ratios. (5) On average, relative earnings in the 1974-1985 period were from 9 to 13 percentage points higher than they had been twenty years earlier. Thus, nearly all of the gains in black men's relative earnings since World War II occurred between 1964 and 1974 while the earlier and later periods were characterized by a stable relative earnings position.

The preceding "facts" regarding changes in relative earnings should influence the specification of tests of the labor supply-sample censoring hypothesis. The hypothesis has three testable implications. (1) Since an increased utilization of transfer payments is the hypothesized cause for the apparent gain in relative earnings, the increased utilization should be more pronounced among black men between 1964 and 1974 than among white men. (2) If transfer payments have been responsible for labor supply reductions, the reductions should be largest in the 1965-1974 period. (3) Those who stop working due to transfer payment availability should be drawn disproportionately from the lower tail of the earnings distribution.

II. Receipt of Transfer Payments

The motive force behind the sample censoring hypothesis is the availability of transfer payments. Unfortunately, there are no comprehensive annual time series data that show the receipt of transfers by race and sex from the mid 1950s to the present.[3] Several programs make payments, but program data with racial detail are available only for OASDI (or Social Security) beneficiaries back to the 1950s and for unemployment insurance since

1969. Household interview data on the receipt of transfers from seven programs are available from the Current Population Survey (CPS) since 1968. For years prior to 1963 just a few transfer programs (Social Security and public assistance) are identified consistently in the CPS. This lack of appropriate data restricts our ability to adequately test the first of the three implicatins of the sample censoring hypothesis: an acceleration in the receipt of transfers by black men in the 1965-1974 period.

Persons younger than age 65 have been eligible to collect Social Security Disability Insurance since 1957 while retirement benefits have been paid to 62-64 year old men since 1961. The proportion of the male population in OASDI benefit status aged 25 to 64 was examined with multiple regressions. The analysis did not show evidence of an accelerated movement into beneficiary status by nonwhite men in the period from 1965 to 1974 when compared to the earlier period from 1957 to 1964.[4]

Although data by race on the receipt of transfer payments are incomplete in the 1950s and early 1960s, it is clear that a large percentage of men receive one or more type of transfer payment each year. Data from the CPS, for example, show that about thirty percent of both nonwhite men and white men aged 16 and older received transfer payments sometime during 1980.[5] For men of both races the proportion who received transfers increased sharply with age, and the nonwhite recipiency proportions were higher in nearly all age groups.[6] When individual transfer programs were examined it was clear in CPS data that unemployment insurance was the most important transfer for men under age 45 while disability and retirement transfers became increasingly important among the groups older than age 45. In summary, a large percentage of men receive transfer payments, but transfer payment data do not provide clear

evidence as to the validity of the sample censoring hypothesis because they are not available for the full time period when gains in relative earnings took place.

III. Labor Supply

If the availability of transfer payments has had a differential effect on labor supply by race, this should be reflected in time series labor supply indicators. Annual labor force participation rates, the most common indicators of labor supply, have been published by age and race since 1954. Male participation rates have been trending downward with the largest declines occurring among older men (55-64 and 65 and older) of both races and among nonwhite men younger than age 25.[7]

To investigate the possible effects of transfer payments on labor supply, time series multiple regressions were fitted using a trend-cycle specification. Two trend variables were included in each regression; one to control for the long term downtrend in participation rates and one to test for a trend acceleration in the 1965-1974 period. The exact regression specification was as follows:

(1) $LFPR = a + bDGNP + cTrend + dT65\text{-}74$

where LFPR = a weighted average of age-specific labor force participation rates for eight groups (16-17, 18-19,..., 65 and older) using 1974 population shares as weights,

DGNP = the proportional deviation of actual real GNP from full employment GNP,

TREND = a linear time trend (= 1 in the first year, 2 in the second year, etc.)

T65-74 = a 1965-1974 time trend (= 0 before 1965, = 1 in 1965, = 2 in 1966, ..., = 10 in 1974 and later years).

Table 2 displays coefficients, t ratios and summary statistics (the R^2, the standard error of estimate and the Durbin-Watson statistic) from the regressions. Since the residuals from time series regressions frequently show evidence of positive serial correlation, the equations were fitted in two ways; with and without corrections for first order serial correlation. In equations (1) and (6) which were estimated for the 1954-1985 period, the long term trend coefficients are negative, highly significant, and the trend is larger for nonwhite men. The trend acceleration coefficient is also significant for nonwhite men. It indicates that the nonwhite male participation rate declined by an addition 2.6 or 2.7 percentage points during 1965-1974. In contrast, the trend acceleration coefficient for white men in the same period is positive and significant (at the .05 level after correction for serial correlation). It suggests that the decline in the white male participation rate slowed by 1.0 or 1.1 percentage points during these years.

The results in equations (1) and (6) are consistent with the sample censoring hypothesis. In multiple regressions which were adjusted for serial correlation, the trend acceleration coefficients by race were of opposite signs, both were statistically significant and they accounted for a cummulative widening of the racial differential in male participation rates of 3.9 percentage points between 1964 and 1974. Equations (2) and (7) repeat the same equation specification using a shorter data period (to cover the same years as other regressions in Table (2)), and yield results which are nearly identical to those of equations (1) and (6). Similar qualitative results were also obtained in regressions that measured the cyclical control and/or the trend acceleration term differently.[8] The participation rate data show that, ceteris paribus, there was an accelerated decline in the labor supply of nonwhite men during the 1965-1974 period.

Table 2. Time Series Regressions to Explain Male Labor Supply by Race: 1954-1985 and 1958-1985

Ind. Variables and Summary Statistics	Equation Numbers, Coefficients and t Ratios									
	(1) LFPR 1954-1985	(2) LFPR 1958-1985	(3) PFW 1958-1985	(4) PPW 1958-1985	(5) PNW 1958-1985	(6) LFPR 1954-1985	(7) LFPR 1958-1985	(8) PFW 1958-1985	(9) PPW 1958-1985	(10) PNW 1958-1985
	NONWHITE MEN					WHITE MEN				
C	.832 (373.2)	.816 (366.8)	.449 (82.7)	.408 (73.4)	.143 (38.8)	.841 (686.3)	.829 (783.7)	.574 (245.4)	.300 (117.1)	.126 (73.6)
DGNP	-.108 (3.6)	-.116 (3.7)	-1.068 (13.9)	.474 (6.0)	.594 (11.4)	-.008 (.5)	-.014 (.9)	-.685 (20.6)	.457 (12.5)	.228 (9.4)
Trend	-.00368 (13.5)	-.00349 (10.3)	-.00164 (2.0)	-.00464 (5.5)	.00628 (11.2)	-.00274 (18.3)	-.00262 (16.2)	-.00181 (5.0)	-.00157 (4.0)	.00337 (12.9)
Trend Acceleration (1965-1974)	-.00262 (4.6)	-.00285 (4.5)	.00307 (2.0)	-.00237 (1.5)	-.00070 (.7)	.00101 (3.3)	.00089 (3.0)	.00156 (2.4)	.00044 (.6)	-.00200 (4.1)
R^2	.990	.987	.902	.924	.982	.985	.983	.967	.863	.976
Std. Error	.0048	.0049	.0121	.0124	.0082	.0026	.0024	.0052	.0057	.0038
D.W.	1.49	1.48	1.12	1.42	2.01	.92	.71	1.51	1.20	1.54
	NONWHITE MEN					WHITE MEN				
C	.832 (248.5)	.814 (247.8)	.469 (17.1)	.400 (33.4)	.144 (36.0)	.841 (310.8)	.827 (261.5)	.580 (93.2)	.296 (42.1)	.125 (48.7)
DGNP	-.102 (2.8)	-.131 (3.3)	-.744 (7.5)	.343 (2.5)	.619 (11.4)	-.002 (1.0)	-.037 (1.9)	-.579 (11.6)	.366 (6.4)	.215 (6.4)
Trend	-.00363 (9.5)	-.00331 (7.7)	-.00257 (1.2)	-.00383 (2.8)	.00616 (10.8)	-.00277 (9.7)	-.00254 (8.8)	-.00229 (3.3)	-.00122 (1.6)	.00347 (10.1)
Trend Acceleration (1965-1974)	-.00270 (3.6)	-.00298 (3.9)	.00257 (.5)	-.00301 (1.2)	-.00064 (.6)	.00110 (1.9)	.00100 (1.7)	.00187 (1.4)	.00023 (.2)	-.00207 (3.4)
Rho[a]	.246 (1.2)	.206 (1.0)	.787 (4.2)	.429 (1.8)	-.112 (.5)	.572 (3.0)	.681 (3.7)	.581 (3.3)	.614 (3.2)	.228 (1.1)
R^2	.989	.986	.937	.914	.981	.989	.990	.970	.868	.976
Std. Error	.0048	.0048	.0098	.0122	.0083	.0023	.0018	.0051	.0052	.0038
D.W.	1.79	1.85	2.38	2.07	1.85	1.70	1.58	1.92	1.95	1.91

Source: All labor supply indicators are available from the Bureau of Labor Statistics of the U.S. Department of Labor. All dependent variables were measured as fixed weight averages of age-weighted data. All variables are defined in the text.

[a]Estimated coefficient of first order serial correlation.

A second type of measurement on male labor supply by race can be obtained from work experience data which are available through the U.S. Department of Labor.[9] In March every person aged 16 and older included in the Current Population Survey is asked questions about weeks of work and average hours worked per week during the previous calendar year. For any population group a convenient way to summarize its annual work experience is with three proportions defined as follows:

PFW, the proportion of the population that works full time (35 or more hours per week)-full year (50 or more weeks);

PPW, the proportion that works less than full time-full year, i.e., some combination of part time and/or part year work, and

PNW, the proportion that does not work at all.

The three proportions sum to unity. For the sake of brevity PFW and PPW can be referred to as the full time and part time proportions respectively. Changes in the three proportions reflect both long run decisions about labor supply and short run business cycle factors. Decisions to work less are evidenced by a reduction in PFW and an increase in PNW. Changes in PPW are more ambiguous because they could signal changes from full time - full year work status or changes from nonwork status. Data by race and age for the three proportions are available since 1958.

Work experience data can describe labor supply behavior in a way that is particularly relevant to the sample censoring hypothesis. An increased prevalance of complete withdrawal from earnings status which is alleged by the hypothesis is shown by an increase in PNW. Furthermore, changes (declines) in the two proportions PFW and PPW also can convey information about the earnings level of people who stop working. In 1965, for example, 67.6 percent of white men who worked full time - full year earned more than the median for all

persons aged 15 and older. In contrast only 13.2 percent of white male part time (and/or part year) workers earned more than the all-worker median. The type of labor supply reduction consistent with the sample censoring hypothesis is an increase in PNW and a simultaneous decrease in PPW. In contrast, if PNW rises but PFW falls, the measured earnings median would tend to fall. Thus the sample censoring hypothesis implies that PPW falls (not PFW) when labor supply decreases.

Equations (3), (4) and (5) and (8), (9) and (10) of Table 2 are regressions explaining the three work experience proportions for nonwhite and white men respectively. The same three explanatory variables are used in these equations as in the previous regressions, and the dependent variables are fixed weight averages of age-weighted data.[10] As before, equations were fitted both with and without corrections for first order serial correlation. Since the three work experience proportions sum to unity, the intercepts for a set of three equations, e.g., (3), (4) and (5) sum to unity while the slope coefficients for a given explanatory variable sum to zero (in equations not corrected for serial correlation).

The business cycle variable DGNP enters all work experience regressions significantly and the coefficients indicate that PFW falls during a recession while PPW and PNW increase. For a given change in the cyclical control variable PFW declines by more among nonwhite men than among white men while PNW increases by more. The equations show the long term donwtrends in PFW and PPW for men of both races with the decreases in PPW being much larger among nonwhites. It is also clear that the trendwise increases in nonwork status (PNW) have been much larger for nonwhites. Over the 1958-1985 period the

increase in PNW has averaged about 6 percentage points per decade for nonwhite men while it averaged 3.0-3.5 percentage points for white men.

The trend acceleration variables which are crucial in the sample censoring hypothesis do not show major effects or major differentials by race in the work experience regressions. Among nonwhite men the point estimates suggest that PFW increased while PPW and PNW decreased during the 1965-1974 period (relative to the long term downtrend). None of the nonwhite trend acceleration coefficients are significant in the equations which adjust for serial correlation. The one trend acceleration term that is consistently significant is found in equation (10) which explains PNW for white men, and it shows that entry into nonwork status declined during the 1965-1974 period. Results similar to those shown for equations (3)-(5) and (8)-(10) were obtained in regressions that used alternative measures for the cyclical control and the trend acceleration terms.[11]

To summarize, a time series regression analysis of labor supply did find evidence an accelerated rate of decline in the nonwhite male labor force participation rate between 1964 and 1974, the years when there was a substantial increase in measures of relative earnings. When work experience data were examined, however, the regressions did not reveal a statistically significant acceleration in the movement of nonwhite men from part time work status to nonwork status during these years. Because most part time workers earn less than the median, this type of labor supply reduction would be consistent with the sample censoring hypothesis. Since this pattern was not observed, this analysis of labor supply does not provide support for the sample censoring hypothesis.

IV. The Prior Earnings of Transfer Recipients

Under the sample censoring hypothesis labor force drop-outs are predicted to have had lower than average earnings in the years prior to leaving the labor force. Further, those who drop out are motivated to do so by the availability of transfer payments. A longitudinal data file present at the Urban Institute combines micro data from the March 1978 Current Population Survey (CPS) with earnings histories from the Social Security Administration's Summary Earnings Record (SER). The CPS provides information on work status and receipt of transfers (by program) in 1977 while the SER has annual data on Social Security covered earnings (up to the Social Security taxable wage base) for each year between 1950 and 1980. With these data one can examine the prior earnings of persons who were both transfer recipients and nonworkers in 1977.

Since the data on prior earnings are from the SER, a Social Security data source was also used to characterize the earnings distribution for all workers. The comparison data came from tabulations of Employee-Employer records that were used in an earlier study of black-white earnings differences (Vroman (1974)). The data cover the years 1957 to 1972 and refer to workers aged 16-64. Unlike the SER data, these data are not affected by truncation problems because the Employee-Employer records estimates of annual earnings in excess of the taxable wage base. The same race indicators used in the earlier study (black and "all other") were also used in the tabulations of the CPS-SER data.[12]

Table 3 presents median earnings data which compare the prior earnings of 1977 transfer recipients (who have stopped working) with the earnings of all covered workers for four separate years (1957, 1959, 1967 and 1969). To

Table 3. Median Earnings and Worker Counts for All Workers and for 1977 Transfer Recipients Who Have Stopped Working, 1957-1969

Year	Black Men			White Men		
	All Workers with Covered Earnings (1)	Prior Earnings of 1977 Transfer Recipients (2)	Ratio of Earnings Medians [(2)/(1)] (3)	All Workers with Covered Earnings (4)	Prior Earnings of 1977 Transfer Recipients (5)	Ratio of Earnings Medians [(5)/(4)] (6)
Median Earnings of Workers Ages 16-64						
1957	1982	2538	1.281	3672	>4200[a]	>1.144[a]
1959	2105	2258	1.073	4052	4797	1.184
1967	3107	3444	1.108	5562	6236	1.121
1969	3829	4321	1.128	6311	7137	1.131
Median Earnings of Workers Aged 25-64						
1957	2372	2632	1.100	4320	>4200[a]	> .972[a]
1959	2507	2401	.958	4670	>4800[a]	>1.028[a]
1967	4011	3723	.928	6813	6363	.935
1969	4871	4668	.958	7792	7285	.935
Counts of Workers with Earnings Aged 16-64						
1957	38,255	239	-	349,353	2466	-
1959	38,983	240	-	360,166	2460	-
1967	50,830	227	-	423,352	2120	-
1969	52,595	220	-	445,221	1851	-
Counts of Workers with Earnings Aged 25-64						
1957	29,896	230	-	276,866	2398	-
1959	30,581	229	-	283,623	2409	-
1967	35,620	209	-	312,065	2058	-
1969	36,574	203	-	322,251	1736	-

Source: Data for all workers with covered earnings are from the Social Security 1 percent Employee-Employer file. Data for 1977 transfer recipients are from a matched file combining the Current Population Survey with Social Security Summary Earnings Records. Age is measured as the age attained during the year.

a. Earnings median exceeds the Social Security taxable wage base ($4200 in 1957, $4800 in 1959).

minimize truncation problems in the SER data, the four years selected were ones where the Social Security taxable wage base was high relative to average earnings. The top panel shows medians for persons aged 16-64 in the indicated years. For black and white men the 1977 transfer recipients had medians which exceeded the all-worker medians in each of the four years. The medians for the transfer recipients were from 7 to 28 percent higher than the all-worker medians, and there is no obvious tendency for these ratios to be systematically different by race. For men of both races the effect of removing subsequent transfer recipients from the overall earnings distributions would be to lower, not to raise, the resulting medians. This is opposite to the prediction of the sample censoring hypothesis.

In Part II it was noted that growth in transfer recipiency has been concentrated among men of older ages and in the programs that provide disability and retirement benefits. This influences the data on the median earnings of transfer recipients shown in Table 3. The age distributions of the 1977 transfer recipients have proportionally more older workers than the all-worker age distributions. For example, 21.9 percent of all black men aged 16-64 with covered earnings in 1957 were aged 16-24. Among the 1977 transfer recipients, however, only 3.8 percent were aged 16-24 in 1957.[13] Similar disparities in age distributions underlie the other medians which are compared in the top panel of Table 3.

Since age-earnings profiles slope sharply upward, this difference in the underlying age distributions accounts for much of the difference in the medians observed in the top panel of Table 3. To control for age differences the second panel of the table compares medians among men aged 25-64. In this narrower age range the medians for the 1977 transfer recipients are similar to

the all-worker medians but somewhat the lower of the two. Of the eight comparisons that can be made in the second panel of Table 3, two show median earnings ratios that unambiguously exceed 1.0, i.e. the medians are higher for the transfer recipients, while five ratios range from .928 to .958. On average, the men who had stopped working and were receiving transfers in 1977 earned somewhat less in earlier years than other men of the same age. Because transfers are available primarily to older adult men, however, their dropout behavior tends to lower the overall earnings median even though it raises the median among men aged 25-64. This apparent paradox arises from the sharp upward slope of the male age-earnings profile.[14]

Within the group of adult male 1977 transfer recipients who had stopped working, it is particularly instructive to examine the prior earnings of men who were aged 25-44 in 1957. One could argue that without the availability of transfers these men who were all younger than age 65 in 1977 would have still been working in 1977. For black and white men in this age group the 1957 earnings medians were respectively $2510 and above $4200, i.e., both were higher than the overall median for men aged 16-64. The dropout behavior of men aged 25-44 in 1957 tended to lower the overall median just as did the behavior the subsequent transfer recipients aged 45-64. Thus the conclusion of the preceding paragraph is not altered when the analysis was confined to men who were still younger than age 65 twenty years later.

A final point to observe about the medians shown in Table 3 is the absence of any strong contrasts by race. The 1977 transfer recipients of both races had previously earned somewhat less than the average for workers of the same age, but considerably more than the average for all workers aged 16-64.

V. The Effects of Dropouts on Measured Earnings Medians

Although a clear link between transfer payments and labor force withdrawal during the 1965-1974 period could not be established by the analysis of Parts II, III and IV, it was clear that nonwhites have exhibited proportionately larger labor supply reductions and that the reductions have been of a large scale. These labor supply reductions could have effects on calculated earnings medians that have been proportionately larger for black men than for white men.

To examine the effects of labor force dropouts on calculated earnings medians, Table 4 displays data by age and race on the numbers of dropouts and estimated numbers with above-average and below-average earnings. Although Butler and Heckman emphasized the link between transfer payment availability and dropping out, the previous analysis of this paper rejects key testable elements of their hypothesis. The approach to be used here considers dropout behavior due to all causes, not just availability of transfers, and it covers the 1964-1985 period. The purpose is to derive estimates of the effects on measured earnings medians that can be attributed to dropouts.

Work experience data prior to 1976 do not distinguish blacks from other nonwhites. Table 4 shows estimates of black male nonworker proportions in 1964 that were derived from published BLS data. Black/nonwhite differentials in nonwork proportions were observed for the post-1975 period and then applied to 1964 data for nonwhites.[15]

Increases in zero earnings proportions occurred for all age-race groups between 1964 and 1985. Age-specific increases were consistently larger for black men, but the racial contrasts were particularly large among 16-19 and 20-24 year olds. When the changes in the zero earner proportions were then

Table 4. Estimates of the Number of Dropouts by Race and the Level of Earnings, 1964 to 1985

	Changes in the Number with Earnings (000's)							
	Black Men				White Men			
	16-19	20-24	25-64	16-64	16-19	20-24	25-64	16-64
Proportion with zero earnings								
PNW 1964	.389	.099	.069	-	.287	.072	.040	-
PNW 1985	.546	.241	.181	.236	.314	.079	.091	.111
1964-85 Change	.157	.142	.112	-	.027	.007	.051	-
Population in 1985 (000s)	1018	1193	5714	7925	5955	8097	49956	64008
Change in No. with Earnings	160	169	640	969	161	57	2548	2766
Effects of Dropouts Assuming that Dropouts Earn 85 Percent of Others of the Same Age								
Proportion with Below-Median Earnings[a]	.969	.749	.448	-	.994	.885	.468	-
Change in No. Below Median	155	127	287	569	160	47	1192	1399
Change in No. Above Median	5	42	353	400	1	10	1356	1367

Source: Data on population and the proportion with zero earnings are based on U.S. Department of Labor, Work Experience surveys.

a. Based on 1967 earnings distributions from the Social Security Employee-Employer file. All earnings in 1967 age-race-specific distributions were reduced by 15 percent.

multiplied by the 1985 age-specific population estimates, the result is an estimate of the number of dropouts from earnings status due to all causes. The total numbers were .969 million for black men and 2.766 million for white men. Among 16-64 year olds the black male population in 1985 was 12 percent of the white male population, but black dropouts represented 35 percent of the number of white dropouts.

The age distributions of the two dropout groups were quite different. Among black men 34 percent (.329 of .969 million) were aged 16-24 while among whites this age group accounted for only 8 percent (.218 of 2.766 million) of dropouts. Even though younger black men exhibited the largest increases in the zero earner proportions, those aged 25-64 still made up 66 percent of the black dropout total.

The bottom panel of Table 4 then estimates how many of the dropouts in each age group earned less than and more than the median for all workers aged 16-64. It has been argued that dropouts on average would be expected to earn considerably less than other workers of the same age. For the 1977 transfer recipients examined in Table 3 of Part IV, however, the median earnings of 25-64 year olds averaged more than 90 percent of the medians for all workers of the same age. To examine the possible effects of lower earnings among dropouts, the bottom panel of Table 4 displays calculations based on the assumption that the median earnings of dropouts in each age-race group was 85 percent of the median for other workers of the same age and race. The 85 percent assumption is not completely arbitrary. It was made in light of the actual experience of nonworking transfer recipients as summarized in Table 3, and then further adjusted downward to provide an upper bound estimate of the effect of dropout behavior on measured medians.

Under this assumption about prior earnings, the estimated proportion of black male dropouts with below median earnings is .587 (.569 of .969 million).[16] Note that a majority of black dropouts aged 25-64 (.353 of .640 million) earned more than the all-worker median. Despite the much larger scale of the black dropout proportion the impact on the overall earnings median must still be comparatively modest because 41.3 percent of the dropouts are estimated to have had above-average earnings. The white male dropouts are almost evenly divided between above-average and below-average levels of prior earnings.

Table 4 provides estimates by race as to the cumulative effect of dropout behavior over the entire 1964-1985 period. Its estimates include dropouts from all causes, not just the increased recipiency of transfer payments. Based on the Table 4 data, calculations were performed to estimate the effects of dropping out on the CPS medians published for 1985. The dropouts (.969 million black men and 2.766 million white men) were added to the 1985 CPS earnings distributions using the above-median and below-median counts as shown in the bottom two lines of Table 4.

The published black/white median earnings ratio in 1985 (for all workers with earnings) was .663 which is .132 above the estimated ratio of .531 for 1964.[17] Adding dropouts back into the two racial earnings distributions caused the black median to decline by $359 (from $12,447 to $12,088 or 2.9 percent) while the white median was essentially unchanged (lowering it by $13 or .1 percent).[18] The black/white median earnings ratio was then computed to be .645 or 2.7 percent lower than the published ratio of .663. These calculations show that dropout behavior has had a measurable, but modest, effect on the published black/white median earnings ratio. The effect accounts for only

about 14 percent of the convergence in the black/white ratio that occurred between 1964 and 1985.

Brown (1984) has also estimated the effect of dropout behavior on black/white earnings ratios. His examination of earnings distributions which covered the years 1953 to 1978 concluded that 40 percent of the convergence in black male earnings that occurred after 1964 was due to the higher rate of black male dropout behavior while the other 60 percent reflected improvements in relative earnings due to all other causes. Brown assumed that all dropouts earned less than the median. Therefore, his estimates of the effects of dropout behavior on measured medians are larger than the estimates made in this paper. In his paper, Brown (1984, p. 43) acknowledged that the assumption that all dropouts earned less than the median could lead to an overestimate of the effect of sample censoring. The calculations of this paper suggest that sample censoring accounts for less than 20 percent of the measured post-1964 convergence in black men's median earnings rather than 40 percent.

The choice of the relative earnings measure to be used for black/white comparisons is to some extent a matter of personal preference as well as convention. The ratio of relative earnings at the medians of the black and the white distributions is certainly the most widely used measure of relative earnings. It has been shown here that the median earnings ratio has been affected by the higher rate of dropout behavior among black men. For the entire 1964-1985 period there was a sizeable increase in the median earnings ratio even after adjusting for the effects of dropout behavior. Eighty-six percent of the measured convergence in the CPS median earnings ratio (.114 of .132) remained after the published distributions were adjusted to take account

of dropouts. Since 1974, however, there was nothing in the measures of relative earnings examined here to suggest an important continuing improvement in the relative earnings position of black men.[19]

Footnotes

1. See, for example, Figure 1 and Table A1 in Vroman (1986). This paper presents six time series on annual median earnings ratios for men; three from the Census Bureau's Current Population Survey and three from the Social Security Administration. For the 1953-1983 period of higher ratio in any of the six series was .734.

2. In fact, for the annual series that is available for the longest time period (the nonwhite/white ratio for wage and salary workers aged 15 and older), the ratio was essentially unchanged from 1948 to 1964.

3. Part III of Vroman (1986) examines the receipt of transfers by nonwhite men and white men.

4. The regressions explained a fixed weight average of the proportion of men in benefit status aged 25 to 64 based on underlying data for men aged 25-34, 35-44, 45-54, 55-59 and 60-64. The regressions had two main findings; (i) no evidence of an accelerated movement into benefit status during 1965-1974 and (ii) sharply reduced movement into benefit status after 1977.

5. See, for example, Table 4 in Vroman (1986).

6. The fact that overall recipiency proportions were about equal even though age-specific proportions were higher for nonwhite men is explained by the younger average age of nonwhite men. When white male population weights were applied to age-specific nonwhite recipiency proportions the nonwhite recipiency proportion was computed to be ten percent higher than the white proportion (.333 versus .300) in 1980 CPS data.

7. The Freeman-Holzer (1986) volume analyzes employment problems of black youth.

8. The alternative cyclical controls were the unemployment rate for all persons aged 16 and older and the unemployment rate for men aged 35 to 54. Trend acceleration terms were measured for the following periods; 1963-1972, 1964-1973, 1965-1975 and 1965-1976. All combinations of these variables produced results similar to those shown for equations (1) and (6) in Table 2.

9. See U.S. Department of Labor (1977) which has work experience data for 1976.

10. The age groups were 16-19, 20-24, 25-64 and 65 and older before 1964. After 1964 the groups were 16-19, 20-24, 25-44, 45-64 and 65 and older.

11. Footnote 8 identifies the other cyclical and trend acceleration variables.

12. In other words the data for white male workers also include a small representation (less than 2 percent of the total) of workers who are other nonwhites, i.e., American Indians and Asians.

13. Counts of 16-64 year olds and 25-64 year olds associated with each median are shown in the bottom two panels of Table 3.

14. For example, compare the medians in the top two panels of Table 3. The medians for 25-64 year olds range from 18 to 29 percent above the medians for all workers aged 16-64.

15. Estimates of the black male nonworker proportions in 1964 were made by the author. Since roughly 90 percent of nonwhite men were black in 1964 (compared to 81 percent in 1985) the estimated black nonworker proportions in Table 4 are very similar to the published nonwhite proportions.

16. The calculations were made using actual age-race-specific earnings distributions after all dividing points between adjacent earnings intervals were lowered by 15 percent. Thus the typical dropout earned 85 percent as much as his all-worker counterpart of the same race and age (16-19, 20-24 and 25-64). For each of these earnings distributions, the fraction who earned less than the all worker median for men of the same race was computed and the fractions appear in the bottom panel of Table 4.

17. Recall from Table 1 that the CPS black/white median earnings ratio (for all workers with earnings) was first published in 1967. This ratio in 1967 (.580) was compred to the nonwhite/white ratio among wage and salary workers for 1967 (.639) and then used with the 1964 nonwhite/white wage and salary worker ratio (.585) to derive an estimate of .531 for the black/white ratio in 1964, i.e., [.531 = (.580/.639) * .585].

18. The procedure for computing the revised medians was straightforward. The "excess" number of dropouts who earned less than the median (n') was computed by subtracting the above-median count from the below-median count appearing in the bottom two lines of Table 4. This number was then halved. The frequency density of earnings at the median was then used along with ($n'/2$) to reduce the published earnings median to a corrected median. Since ($n'/2$) was quite small for men of both races, the resulting changes in the published medians were of modest size.

19. Darity and Myers (1980) have measured relative earnings using mean earnings per capita (including persons with zero earnings). I calculated such measures in 1964, 1974 and 1985 for black men and white men. The black/white ratios based on such measures were .512 in 1964, .573 in 1974 and .581 in 1985. The time series pattern in these ratios is very similar to the ratios of median earnings as examined in this paper, i.e., large gains between 1964 and 1974 but stability in relative earnings between 1974 and 1985.

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